

A REVISION OF THE AUSTRALIAN SAWFLIES OF THE GENUS  
*PERGA* LEACH, *sens. lat.* (HYMENOPTERA SYMPHYTA).

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(44 text-figures.)

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The insects dealt with here comprise the whole of the subfamily *Perginae* (*Pergidae*) in my scheme of classification, Benson (1938).

This study was initiated when naming some sawflies received from Mr. J. C. Clark of the National Museum, Victoria. Great difficulty was experienced in using Morice's key (1919) as some of the main group characters seemed uncertain in their application to individual specimens or species, and arbitrary in that in the resulting classification what appeared to be closely related species sometimes got widely separated. Also that while some of the groups seemed to be based on trivial and variable characters, a whole host of unused structural characters were noticed in the specimens examined.

My excuse then for writing this paper is that I believe that I have overcome some of these difficulties by abandoning the main grouping used by Morice and reclassifying the whole according to a different set of characters, many of them not used before and often cutting right across Morice's arrangement. Morice expressly says (p.250) that in *Perga* and *Pterygophorus* he took some trouble "to make the order in which the species are arranged to correspond to my idea of their natural affinities. . . ."

Many of the sixteen or so groups of species into which I have now broken up the main mass will in due course probably have to be regarded as distinct genera. Owing to the great number of new species that are certain still to be found, especially if careful collecting and biological studies are made, I have hesitated to split up the genera too finely. This is far better left until some such time as when it seems no longer possible to get new species, so that the likelihood of intermediates occurring between the "Groups" is more remote. In the meantime, I have made a compromise: the old genus *Perga* now represents a subfamily (the *Perginae*) divided into two tribes and eight genera, several of which consist of more than one of the basic species-groups.

The new genera proposed by Shipp (1894) are, as Morice says, based on trivial and useless characters, some even non-existent, in spite of his confident foreword! At the same time, and for entirely other reasons than the ones given by Shipp, some of his genotypes do happen to fall into distinct genera, so that their names become available for the genera.

In addition to the types of Leach, Kirby, Westwood, Rohwer and Morice in the British Museum, I have, through the kindness of Prof. G. D. Hale Carpenter, been able to examine the types of Westwood in the Hope Department, Oxford, and through the kindness of Dr. W. Horn, the types of

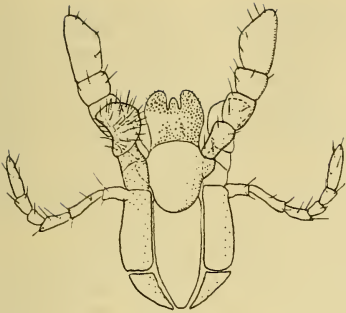


Fig. 1.

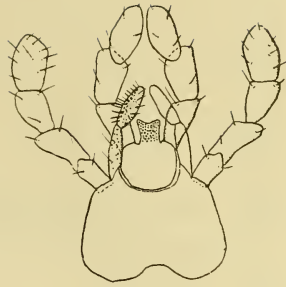


Fig. 2.

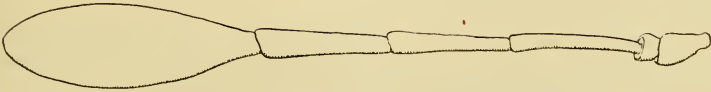


Fig. 3.

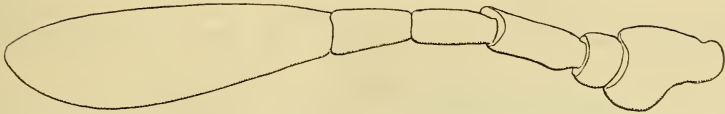


Fig. 4.

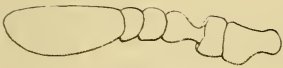


Fig. 5.

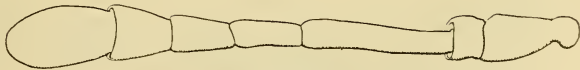


Fig. 6.

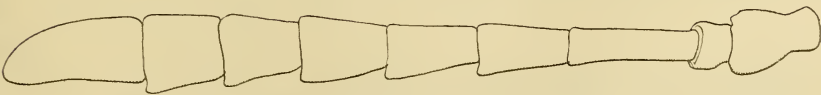


Fig. 7.

Konow in the Deutsches Entomologisches Institute, Berlin; I have also to thank the following who have enabled me to examine much additional material: Mr. Herbert H. Hale, Director of the South Australian Museum (including many of Forsius' types); Dr. C. Anderson, Director of the Australian Museum, Sydney; Dr. A. L. Tonnoir, of the Council for Scientific and Industrial Research, Canberra, F.C.T. (especially for lending me the material bred from the larvae described by W. W. Froggatt); Mr. H. A. Longman, Director of the Queensland Museum; Mr. L. Glauert, Curator of the Perth Museum; Mr. E. R. Wilson, of East Malvern, Victoria, and Mr. P. Buck, Director of the Bernice P. Bishop Museum, Honolulu, Hawaia.

Detailed larval studies are much needed in this group and would no doubt reveal many more species. Actually the larvae of very few species have been described at all, despite the very great interest that surrounds their colonial habits. In this connection it is a pity that even in recent studies of the larvae the species of *Eucalyptus* concerned has often not been reliably identified, as all evidence of this nature is of the utmost importance to the systematist. So also are the long series of individuals, often obtained by breeding, invaluable to the systematist as enabling him to see the range of variation within the species.

The species *P. tristis* Forsius, 1935, pp. 14-15 (from Victoria and said to be near to *P. antiopa* Morice or *P. essenbecki* Westwood), has been omitted from the keys as I have been unable to see any material of it, and, from the description, I am not able to tell where it should be placed.

In the key that follows most of the synonymy is based on actual type comparison; in the few cases where this has not been possible the synonymy is queried.

#### Key to Genera of Perginae.

1. Maxillary palp slender and 6-segmented; labial palp 4-segmented and about twice as broad as the maxillary palp (fig. 1); antennae with 7 or more segments (figs. 6 and 7). (Tribe, *Cerealcini* trib. nov.) . . . 2.
- Maxillary palp 4-segmented; labial palp 3-segmented (fig. 2); both of equal thickness; antenna with 6 or few segments (figs. 3, 4 and 5). . . . . (Tribe, *Pergini*) . . . . . 3.
2. Clypeus flat; antennae (fig. 7) with 8 or more segments and longer than the breadth of the head; segment 3 only about  $1\frac{1}{2}$  times longer than 4 and much less than 4 plus 5. . . 1. *Cerealces* W. F. Kirby, 1882.
- Clypeus with a transverse fold or ridge in the middle, the front  $\frac{1}{2}$  of the clypeus being bent inwards; antenna (fig. 6) with 7 segments and shorter than breadth of head; segment 3 about as long as 4 plus 5. . . . . 2. *Xyloperga* Shipp, 1894 (= *Heptacola* Konow, 1905).
3. Antenna (figs. 4 and 5) shorter than breadth of head; segment 4 at most 3 times as long as broad, generally less than twice; segment 1 (funicle) not longer than broad, except in *Paraperga* Ashmead. . . . . 4.
- Antenna (fig. 3) longer than breadth of head; segment 4 being at least 4 times as long as broad; funicle  $1\frac{1}{2}$  times longer than broad. . . . . 8. *Acanthoperga* Shipp, 1894.
4. Either the radial cell of the forewing is broader than the greatest breadth of the stigma (figs. 9 and 11) or (certain ♂♂ of *Perga*) the malar space is shorter than the diameter of the front ocellus. . . 5.

- Radial cell of forewing at its greatest breadth not broader than the stigma (fig. 10) and the malar space is longer than the diameter of the front ocellus. . . . . 7. *Pseudoperga* Guérin, 1845.
- 5. Hind basitarsus shorter than the next 2 tarsal segments together (measured along upper surface). . . . . 6.
- Hind basitarsus at least longer than the next 2 tarsal segments together. . . . . 7.
- 6. Basal segment of antenna cylindrical and much longer than broad (excluding radicle); 4th cubital cell little more than two-thirds as long as the other 3 cubital cells together. . . 5. *Paraperga* Ashmead, 1898.

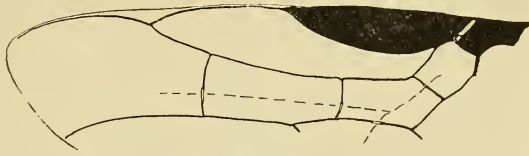


Fig. 8.



Fig. 9.

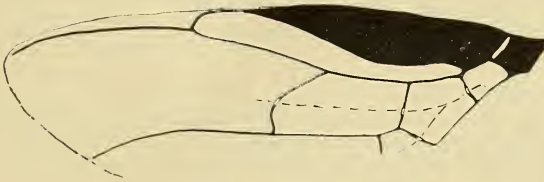


Fig. 10.

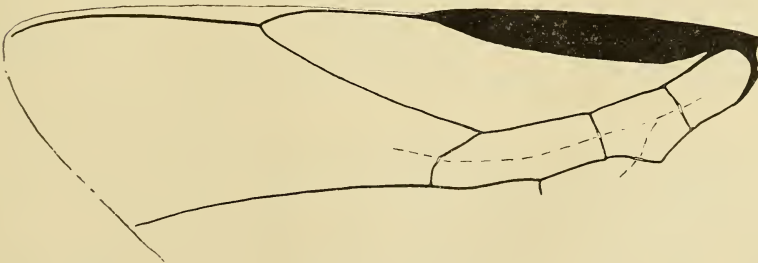


Fig. 11.

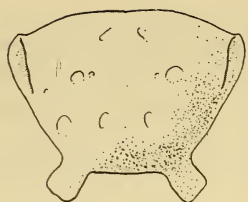


Fig. 12.



Fig. 13.



Fig. 14.



Fig. 15.

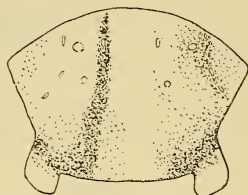


Fig. 16.



Fig. 17.



Fig. 18.



Fig. 19.

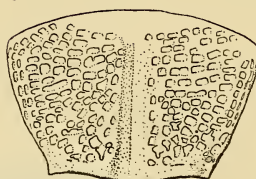


Fig. 20.



Fig. 21.

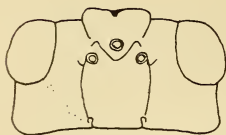


Fig. 22.



Fig. 23.

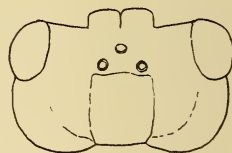


Fig. 24.



Fig. 25.



Fig. 26.

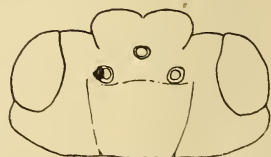


Fig. 27.

- Basal segment of antenna about as broad as long; 4th cubital cell about as long as the other 3 together. . . . . 6. *Antiperga* gen. nov.
- 7. Hind lobes of scutellum very short, not reaching backwards as far as the middle of the hind margin of the scutellum (figs. 19, 20 and 21). . . . . 3. *Perga* Leach, 1817.
- Hind lobes of scutellum well developed and clearly reaching further back than the middle of the hind margin of the scutellum (figs. 16, 17 and 18). . . . . 4. *Pergagraptia* gen. nov.

#### 1. CEREALCES W. F. Kirby, 1882.

Redescription: Head subparallel sided; mouth parts as in fig. 1; maxillary palp slender and 6-segmented; labial palp 4-segmented and nearly twice as broad as maxillary palp; clypeus flat; malar space less than length of pedicel of antenna; antenna (fig. 7) 8-12 segmented and considerably greater in length than breadth of head (♀ 4.5 mm. = 3.5 mm.; ♂ 4 mm. = 3 mm.); funicle (segment 1) excluding radicle, as broad as long; segment 3 at most only about one and a half times longer than 4 and much less than straight vertical furrows; pol about equal to gol.

Thorax: Scutellum convex with a definite longitudinal median groove; strongly narrowed behind, the hind margin being little longer than the 4 plus 5; postocellar area punctured, convex and margined with nearly side; hind lobes well developed.

Wings with a small stigma less than half as broad or long as radial cell; 3rd cubital cross-vein of forewings almost straight and directed to a point well outside the apex of the stigma; 4th cubital cell only about two-thirds as long as the rest of the cubital cells together; basal and 1st recurrent veins subparallel; males without a hairy patch.

Legs with only simple hairs on fore tibia; hind tibia with a broad apex so that the exposed part of the short basitarsus is in the ♀ no longer than the apical breadth of tibia, while in the ♂ it is about one and a half times as long; hind tarsal segments together about half as long as tibia in ♀ and two-thirds in ♂.

Abdomen broad and tapering behind in ♀; dull above with transverse rugulae; ♀ sawsheath projecting slightly and viewed from above is incrassate towards the apex where it is truncate, but bears beneath at its base only simple hairs. Monotypical. Type, *Cerealces scutellata* W. F. Kirby, 1882.

*Cerealces scutellata* W. F. Kirby, 1882, p. 31, and *C. cyathiformis* W. F. Kirby, 1893, p. 42, are both males of the same species. The male, according to Morice (1919), has 10-12 segmented antennae. The unique type of *C. scutellata* has actually only 8 complete segments to the antenna; the last segment forming the club is twice constricted to make three lobes, but the lobes are not actually divided into separate segments. In the female, however, the antenna, except that it has one more segment, is not unlike that of the typical *Xyloperga*.

The species is strikingly coloured, being black with more or less rufous scutellum and antennae, and with the following parts yellowish white; clypeus, inner and outer orbits, hind angles of pronotum, tarsi of all legs and tibiae except sometimes on the outer side apically, femur at least on the hind legs beneath, trochanters of middle and hind legs, with the abdominal terga 2 and 6 in the ♀ and in the ♂ terga 2 and the apical ones

from 7 onwards. The wings are yellowish hyaline with an infusate stigma and venation. Length, 9-13 mm. The female is described in detail by Forsius (1927, pp. 299-300). The saw is illustrated in fig. 33. New South Wales, Victoria and South Australia.

## 2. XYLOPERGA Shipp, 1894.

Redescription: Head subparallel-sided or swollen behind the eyes; clypeus with a transverse fold, the front  $\frac{1}{2}$  being flat and the basal  $\frac{1}{2}$  convex; palps (fig. 1) as in *Cerealces*; malar space equal to or shorter than pedicel of antenna; antenna subclavate, 7-segmented and less in length than breadth of head; segment 3 about equal to 4 plus 5; flagellum slightly shorter than distance between the eyes; postocellar punctured in the middle (except in *amenaida* W. F. Kirby), with clearly defined straight vertical furrows in the *perkinsi* group and outwardly curving furrows in the *halidaii* group; POL greater than OOL.

Thorax as in *Cerealces* but the median groove to the scutellum may be absent.

Wings as in *Cerealces* but that the ♂♂ have a hairy patch on the under-side of the medial, 1st cubital and 1st discoidal cells of the forewing.

Legs except in *amenaida* W. F. Kirby bearing only simple hairs on the front tibia; hind tarsal segments  $\frac{1}{2}$  to  $\frac{3}{4}$  as long as hind tibia; basitarsus about  $1\frac{1}{2}$  times as long as the apical breadth of the tibia.

Abdomen as in *Cerealces*. Type, *Perga halidaii* Westwood, 1880.

*Perga jucunda* W. F. Kirby, was placed by Morice in this genus, for what reason he does not say. The type has the mouthparts of a typical *Pergine*, but owing to its peculiar antennae, scutellum and hind tarsi it is being separated into a separate genus *Paraperga* Ashmead.

### Key to XYLOPERGA Shipp.

1. Postocellar region not clearly defined (fig. 23); the vertical furrows almost obsolete; secondary furrows however curve outwards from the vertex and reach to the eyes. . . . . 2.
- Postocellar region clearly defined by almost straight and parallel vertical furrows reaching from the vertex to just outside the hind ocelli (fig. 22). [Saw tooth with few and large secondary teeth (fig. 34); hind basitarsus only as long as apex of hind tibia.] . . . . . 6.
2. Postocellar region of head densely punctured; exposed part of hind basitarsus longer than breadth of apex of hind tibia and more than twice as long as its own apical breadth; front tibia without incrassate hairs; ♀ saw with large teeth bearing numerous fine secondary teeth (figs. 36 and 37). . . . . 3.
- Postocellar region of head unpunctured in the middle; exposed part of hind basitarsus only as long as breadth of apex of tibia and scarcely  $1\frac{1}{2}$  times its own apical breadth; front tibia with some incrassate hairs on its inner surface towards the apex as in typical *Pergini*; ♀ saw with numerous primary teeth (fig. 35). [With the light coloured parts that is the legs, venter, face, antennae, scutellum, margin of pronotum, etc., orange; costa and stigma black; ♂ with the light parts yellowish white; costa and stigma yellow; scaly patch of forewing occupies subcostal and first cubital cells.] South Australia, ♂ and ♀. . . . .  
 . . . . *amenaida* (W. F. Kirby, 1882) (= *rufomaculata* W. F. Kirby, 1882).

3. Hind femora black on the inside at least at the apex. . . . . 4.
- Hind femora not marked with black. . . . . 5.
4. At least funicle and pedicel of antenna with most of the hind and middle femora and apex of hind tibia and in ♀ also costa, basal and median veins black. Side lobes of mesonotum sparsely punctured behind, with shining areas between punctures; scutellum densely punctured and with a medial longitudinal depression. [Bluish black species with only the face, orbits, vertical stripes, edges of mesonotal lobes, with or without scutellum, a band along the middle of the mesopleura, a spot on the side of each abdominal tergum, and more or less the sterna, trochanters, base of tibia and tarsal segment yellow; ♀ with at least strongly infusate apex to forewing.] *Victoria*, ♂ and ♀. . . . . *lalage* (W. F. Kirby, 1892) (= *buyssoni* Konow, 1905).
- With antenna and base of hind and middle femora and in ♀ also costa, stigma, basal and median veins, yellow (in ♂ the costa and stigma may be tinged with grey); side lobes of mesonotum densely punctured, without any large shining areas between the punctures; scutellum hardly punctured but without medial longitudinal depression. [Species very variable in colour may be entirely yellow except for the dark hind femur and apex to hind tibia, or may be more or less dark brown or bluish black marked; in the darkest specimen before me there are three dark transverse stripes on the back of the head and the pronotum (except the hind margins), the mesonotum (except the side margins and the scutellum), the mesopleura except for a transverse lateral band, and the whole of the dorsum of the abdomen are bluish black. This is the form thought by Morice, 1919, to be the ♀ of *lalage* (Kirby). Saw fig. 36.] North Queensland, ♂ and ♀. . . . . *univittata* (W. F. Kirby, 1882).
5. Basal and median veins of forewing dark brown; head without a shiny patch just behind the hind ocelli. [Species variable in colour, dark brown or bluish black with the face, orbits, antennae, vertical stripes, margins of pronotum and of side lobes of mesonotum, scutellum, broken band across pleurae, legs and underside of abdomen yellow.] New South Wales and Victoria. ♀. . . . . *leachii* (Westwood, 1880).
- Basal and median veins of forewing yellow as the other veins; head with a conspicuous shiny unpunctured patch just behind and outside the hind ocelli, usually at the front of the pale vertical stripe. [♂ and ♀ coloured as in *X. leachii* W. F. Kirby, except for forewings; saw as in fig. 37.]. Victoria. . . . . *halidaii* (Westwood, 1880) (= *jurinei* Westwood, 1880).
6. Postocellar region shining in the middle between sparse punctures. . . . . 7.
- Postocellar region dull and densely punctured in the middle. . . . . 8.
7. Antenna, clypeus, postocellar region and all of the legs, black; wings smoky black with black stigma and venation. [Entirely black except for the labrum, the hind orbits and temples, a spot on the middle of the mesopleurae and a line on each side of the dorsum of the abdomen extending from segments 3 to 8. Mesopleura sparsely punctured; POL = OOL as in 24:21. ♀, 17.5 mm.] New South Wales. . . . . *mocsaryi* Konow, 1905.

- Antenna, clypeus, vertical area and legs, except middle and hind coxae, yellow; wings yellowish with stigma and venation brown. [Ochreous-yellow with black on the ocellar region, the mesonotum (excluding the scutellum), the mesosternum, the sterna of abdomen, and more or less the basal and other terga; saw as in fig. 34; ♂ coloured as in the ♀ except that the whole of the venter is pale; the abdomen above is steely blue; the stigma is yellowish brown (less dark than ♀).] South and West Australia, ♂ and ♀. . . . . *perkinsi* Benson, 1935.
- 8. Mesopleura smooth, shining and with very few sparse punctures. . . . . 9.
- Mesopleura dull, with rough rugulous surface. [Mostly yellow species, except for the antenna, spot in middle of pronotum, front lobe of mesonotum, mesosternum, spot on mesepisternum, another or metapleura and on base of hind coxa, hind femur, and apex of middle and hind tibiae, first tergum and a spot on each side of each of the following terga, just above the stigma, all of which are black. Wings yellow; stigma and venation yellow. POL:OOL as 26:20; ♀ saw Morice (Pl. xv., fig. 12); ♂ unknown.] Queensland, North and Central Australia. ♀. . . . . *aurulenta* Morice, 1919.
- 9. Hind femur and generally tibia entirely pale. . . . . 10.
- Hind femur and tibia at least marked with black at apex. [Antenna entirely black; costa and stigma brownish in ♀ (♂ unknown); forewings brownish throughout with black basal and median veins; vertical furrows run from vertex towards the hind ocelli, and are deep in the vertical region; the postocellar area is coarsely punctured with irregular intervening shining areas. Purplish metallic species, with face, temples, upper two-thirds of mesopleura, hind margin of pronotum, margin of side lobes of mesonotum, scutellum, legs (except for inner apex of hind femur, and apex of hind tibia) and sides of abdomen yellow.] South Australia, ♀. . . . . *dentata* (W. F. Kirby, 1883).
- 10. Flagellum of antenna black; mesopleura black with a large white spot or band across the middle. Scutellum shining, sparsely punctured, glabrous; distance between eye and hind ocellus, less than the distance between the two hind ocelli (POL:OOL as about 10:9). South-West Australia, ♀. . . . . *semipurpurata* Morice, 1919.
- Flagellum of antenna yellow; mesopleura white except near the suture dividing it from the mesosternum; scutellum dull, with dense fine punctures, each bearing a short black hair; distance between eye and hind ocellus greater than the distance between the two hind ocelli (POL:OOL as about 11:12). New South Wales and Victoria, ♀. . . . . *forsiusi* sp. nov.

**XYLOPERGA FORSIUSI sp. nov.**

♀. Colour yellow with the following parts blue-black: apex of mandible, suture behind clypeus, semi-circular black mark surrounding the ocelli in front, a spot between the vertical furrow and the eye, and one in the middle of the postocellar region, the funicle and pedicel of antenna, spot in the middle of the pronotum, the mesonotum (except for a spot each side of the front lobe, the raised edge on the side of the side lobes), a medial stripe on the scutellum, the mesosternum and lower part of mesopleura adjoining it, a spot at the base of each coxa, the dorsal parts

of the abdomen. Wings yellowish-hyaline, more deeply yellow at base of forewing; stigma costa and venation yellow.

Length, 17.5 mm.; antenna, 3.2 mm.

Head on dorsal surface (except behind the eyes) covered with fine regular punctures which in the frontal area and postocellar region each bear a black hair; between the punctures are small shining spaces.

Thorax with pronotum punctured with small vague shallow punctures; front lobe of mesonotum densely and heavily punctured, dull; side lobes of mesonotum irregularly and coarsely punctured, with shining interspaces especially behind; scutellum dull with dense fine punctures each bearing a short black hair, but with unpunctured interspaces; under-thorax smooth and shining with a few scattered irregular coarse punctures, and except for the mesopleura, which are glabrous, with scattered pale hairs.

Abdomen and other parts normal; saw as in figure 34. Australia, Victoria, 1 ♀ (holotype), no other data (National Museum, Victoria); Canberra, F.C.T., 1 ♀ (paratype), 8.XI.1929, G. A. Waterhouse (Canberra Museum).

PERGA Leach, 1817.

Redescription: Head when viewed from above, shorter behind the eyes than the length of an eye from that viewpoint (figs. 26 and 27); maxillary palp 4-segmented; labial palp 3-segmented; both of equal thickness; clypeus flat or with inflexed front margin; malar space usually less than diameter of front ocellus; antenna (figs. 4 and 5), 5-6 segmented, clavate, shorter than breadth of head; funicle (excluding radicle) as broad as long; segment 3 little longer than 4; segment 4 at most under 3 times as long as broad and often broader than long; POL:OOL varying, but greater in ♂♂ than ♀♀; postocellar area raised well above the temples each side and margined with subparallel vertical furrows in the *dorsalis* and *kirbyi* groups while in the *dahlbomii* group the area is more roundedly convex, often almost hemispherical with vague curved vertical furrows.

Thorax: Scutellum generally flat or slightly convex, with at most, only a slight medial depression (figs. 19, 20 and 21); hind lobes scarcely developed or at most not reaching backwards as far as does the middle of the hind margin of the scutellum.

Wings (fig. 11) with a stigma varying in breadth but, except in ♂♂ of the *dahlbomii* group, clearly narrower than the radial cell; stigma  $\frac{1}{2}$  to  $\frac{2}{3}$  as long as radial cell; 3rd cubital cross-vein of forewing strongly curved or angled and directed towards a point on the stigma at least  $\frac{1}{3}$ rd from the apex; 4th cubital cell longer than the rest of the cubital cells together; ♂♂ with a specialised patch of hairs on the underside of the forewing generally more or less developed.

Legs with the fore tibia bearing a few incrassate hairs on the inside towards the apex; hind basitarsus at least as long as the 3 following tarsal segments together; hind tarsi together not more than  $\frac{2}{3}$ rd the length of the hind tibia; 5th hind tarsal segment greater than 3 plus 4.

Abdomen stout and in ♀ tapering slightly apically; often dull above with minute transverse rugulae; ♀ sawsheath incrassate apically and in the *dorsalis* group densely covered with stout incrassate bristles (figs. 28 to 31); saw much as in fig. 39 except in the *dahlbomii* group which have saws

as in fig. 38; ♂ abdomen in some species of *dorsalis* group densely pubescent above on the basal segments. Type: *Perga dorsalis* Leach 1817.

Key to PERGA species.

1. Antenna or at least flagellum of antenna shorter than front margin of clypeus; frontal crests above bases of antennae very swollen and so large that the distance between them is at most the same as the breadth of one of them. . . . . 9.
- Flagellum much longer than front margin of clypeus; frontal crests small and much further apart than the breadth of one. . . . . 2.
2. Scutellum shorter than its breadth behind (measured from the middle of the base of each hind lobe) (fig. 19); ♀ sawsheath clothed each side with a very dense brush of bristle, which may be incrassate or toothed apically; wings at least partly infusate flavescent; body metallic green, blue or brown. . . . . 3.
- Scutellum narrowed behind so that it is at least as long as its breadth behind (fig. 20); ♀ sawsheath with only sparse and very fine hairs each side; wings hyaline; body entirely brown. . . . . 7.
3. Mesopleura in the middle dull and rugged with coarse confluent punctures; ♂ abdomen basally densely pubescent above; mostly green species; incrassate bristles on ♀ sawsheath rounded apically without teeth (figs. 30 and 31). . . . . 4.
- Mesopleura in the middle shining with round even-spaced punctures, not confluent; ♂ abdomen with at most very fine short sparse pubescence; species brown, or metallic blue or brown with metallic reflections; incrassate bristles on ♀ sawsheath with apical teeth (fig. 32). . . . . 5.
4. Female sawsheath with extreme apices of the valves diverging when viewed from beneath (fig. 29); sides of the sheath bearing bristles that are almost racket-shaped (fig. 31); hind basitarsus is about as long as the three following tarsal segments together; the next-to-last tarsal segment is clearly longer than broad; hind ocelli closer together so that POL is less than OOL, and the postocellar region is longer than its breadth in front, so that POL is only about half as long as the distance between the hind ocellus and the hind margin of the head; wings yellowish-brown infusate; saw (Morice, pl. xiv., fig. 1). ♀. See below. Queensland and New South Wales. . . . . *dorsalis* Leach, 1817. (= ? *eucalypti* Bennet and Scott, 1855, ? *scotti* Bennet, 1860, *scutellata* Westwood, 1845, and *intricans* Morice, 1919, in parte.)
- Female sawsheath with the extreme apices of the valves converging (fig. 28); bristles on the sides of the sheath less swollen (fig. 30); hind basitarsus is greater than the three following tarsal segments together and almost as long as the four following tarsal segments; hind ocelli further apart so that POL is greater than OOL; postocellar region is shorter than its breadth in front, so that POL is as much as two-thirds the distance between a hind ocellus and the hind margin of the head; wings yellowish; saw (fig. 39). [The males of these two species do not exhibit to the same degree the differences in the distances between the ocelli, the form of the vertical area and proportions of the tarsal segments that can be used for separating the females. Unfortunately the types of both *P. dorsalis* Leach and *P. affinis* W. F. Kirby are males,

and it is by no means altogether certain that the females have been correctly associated with these males; I have had to rely to a large extent on the depth of wing infuscation and the locality. Even the male genitalia have so far yielded no reliable characters for separating the male material at my disposal into two species corresponding with the females. The larva of what is probably *Perga dorsalis* Leach, was described by Bennet and Scott (1859) on "*Eucalyptus citriodora* Hooker" and by Froggatt (1890 and 1891) on "*Eucalyptus corymbosa*, *E. citriodora*, *E. novaeangliae*, etc." Detailed accounts of the colonial habits of the larvae of this species are given by Froggatt (1918), while the account given by Ross (1929) from Victoria and Evans (1934) from South Australia, probably refer to *P. affinis* W. F. Kirby; Evans (p. 438) mentions that his larvae were found on *Eucalyptus obliqua* and refused to eat *E. odorata* and *E. leucosylon*; young larvae were starved into feeding on *E. rostrata* in captivity, but that older larvae died of starvation rather than feed on this tree.] Victoria and South Australia. . . . . *affinis* W. F. Kirby, 1882 (= *intricans* Morice, 1919, in parte).

5. Antenna and legs for most part brown; wings slightly brownish; head above, mesonotum and abdomen at least partly brown though maybe with chalybeous reflections; stigma  $\frac{1}{2}$  as long as radial cell in forewing . . . . . 6.

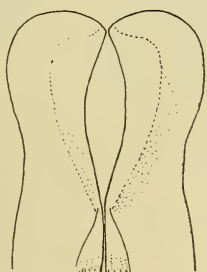


Fig. 28.

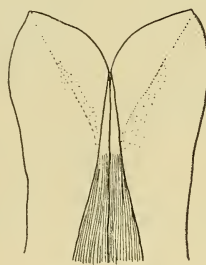


Fig. 29.

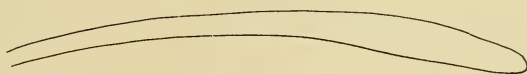


Fig. 30.

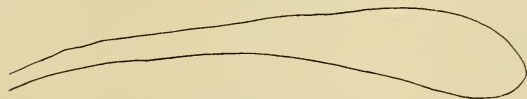


Fig. 31.

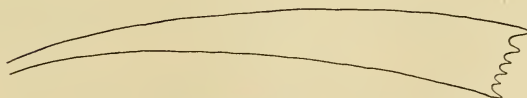


Fig. 32.

- Antenna and legs for most part bluish-black; wings mostly smoky black; head above, mesonotum (except scutellum) and abdomen metallic blue; stigma about 2/3rds as long as radial cell. (Associated with mallee scrub of inner South and West Australia.) . . *konowi* sp. nov.
- 6. Hind tibia with the apical third black; side lobes of mesonotum and abdomen more or less chalybeous. [Saw Morice, plate xiv., fig. 6. South Western Australia, ♂♀.] . . . . . *schiodtei* Westwood, 1880.
- Hind tibia not black apically; thorax and abdomen not at all chalybeous. [Saw Morice, plate xiv., fig. 4. South Western Australia, ♂♀.] . . . . . *klugii* Westwood, 1880.
- 7. Mesopleura above dull and rugulously punctured; radial cell in hind wing about as far from apex of wing as half its own length. . . . . 8.

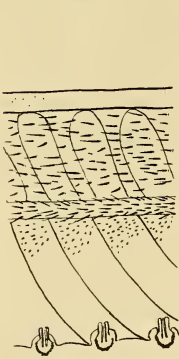


Fig. 33.

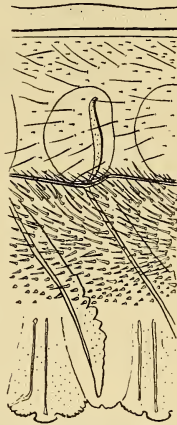


Fig. 34.

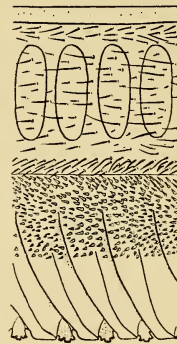


Fig. 35.

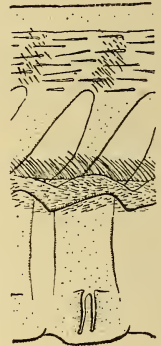


Fig. 36.

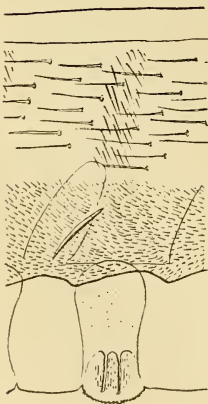


Fig. 37.

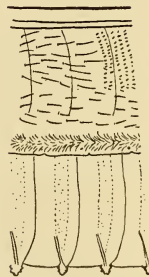


Fig. 38.

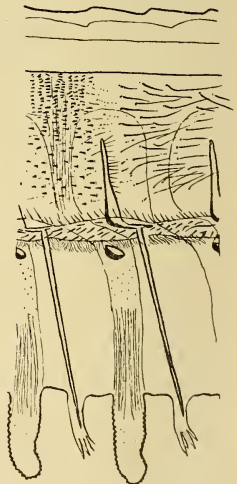


Fig. 39.

- Mesopleura shining between remote punctures; scutellum with a few vague punctures and bisected by a vague longitudinal depression in the middle; hind tarsi together only about half as long as hind tibia; radial cell in hind wing longer so that it is closer to the apex of the wing than half its own length. [Saw Morice, plate xiv., fig. 8. South West and South Australia, ♀.] . . . . . *brevitarsis* Morice, 1919.
- 8. Mesonotum dull all over with rugulous surface; scutellum closely and coarsely punctured all over (fig. 20); hind basitarsus equal in length to the three following tarsal segments together; POL less than OOL. [Saw Morice, plate xiv., fig. 5. Victoria and South Australia, ♂ and ♀.] . . . . . *kirbii* Leach, 1817.
- Mesonotum dull in front, but shining on the sidelobes, especially behind; scutellum with small scattered punctures separated by smooth shining spaces; hind basitarsus greater in length than the three following tarsal segments together; POL greater than OOL. [Saw Morice, plate xiv., fig. 3. Victoria ♂ and ♀.] . . . . . *agnata* Morice, 1919.
- 9. Antennae longer than the distance between their insertions. [Abdomen yellow, more or less marked with meatlic bluish-black above.] 10.
- Antennae shorter than the distance between their insertions. . . . . 11.
- 10. Head and thorax including mesopleura and mesosternum covered with long brown hairs; hind tarsi together  $\frac{1}{2}$  length of hind tibia; flagellum of antenna  $1\frac{1}{4}$  times as long as distance between insertions of antenna; wings yellowish; head above yellow except for the neighbourhood of the ocelli and mesonotum yellow except for at most a macula on each lobe. 17-21 mm. South Australia, ♀. . . . . *brevipes* Forsius, 1927.
- Head and thorax with short pubescence; mesopleura and sternum glabrous; hind tarsi together less than  $\frac{1}{2}$  length of hind tibia (in proportions of about 7:18); flagellum of antenna equal in length to the distance between the insertions of the antennae; wings clear hyaline; head above and mesonotum (except for scutellum) black. 19 mm. South Australia, ♀. . . . . *waiti* Forsius, 1927.
- 11. Front margin of the clypeus inflexed in the middle; ♀ hind tarsi less than  $\frac{1}{2}$  length of hind tibia; antenna pale . . . . . 12.
- Clypeus flat, without an inflexed front margin; either ♀ hind tarsi are more than  $\frac{1}{2}$  length of hind tibia, or else the antenna is black. 13.
- 12. Forewing at the most only slightly cloudy apically; radial cell and base always clear. [♀ bluish black; clypeus, labrum, antenna, outer orbits, margin of pronotum, scutellum band on mesopleura, apex of femora, whole of tibiae and tarsi white; abdomen may be reddish on the middle segments; ♂ as in ♀ but with abdomen and legs entirely pale. Saw (Morice, plate xv., fig. 1). South and Western Australia, ♂♀.] . . *brullei* Westwood, 1880 (= *cressonii* Westwood, 1880, *ritsemei* Westwood, 1880, *dubia* W. F. Kirby, 1882, and *vacillans* Morice, 1919).
- Apex of forewing, including radial cell, densely smoky; base clear. [♀ coloured otherwise as in *brullei*; ♂ unknown.] Queensland and Western Australia, ♀. . . . . *christii* Westwood, 1880.
- 13. Antenna and clypeus black; ♀ hind tarsi about  $\frac{1}{2}$  length of hind tibia. . . . . 16.

- Antenna and clypeus pale; ♀ hind tarsi more than  $\frac{1}{2}$  length of hind tibia. . . . . 14.
- 14. Head, pronotum and abdomen in part yellow; wings flavescent with brown stigma and costa. . . . . 15.
- Head above, thorax and abdomen entirely black; wings almost hyaline with stigma and costa black. [Black; clypeus, face, antennae, tibiae and tarsi of all legs, femur of front legs yellow; ♂ unknown.] Queensland ♀. . . . . *kohli* Konow, 1905 (= *thomsoni* Benson, 1935).
- 15. Front portion of middle lobe of mesonotum dull and rough with dense puncturation; ♀ mesonotum to a large extent, including entire scutellum also sterna of abdomen, black. [♂ has pale scutellum. Saw (Morice, plate xiv., fig. 12).] North Queensland (Cape York) to New South Wales, ♂♀. . . . . *vollenhovii* Westwood, 1880 (= *walkeri* Westwood, 1880).
- Front portion of middle lobe of mesonotum with shining interspaces between scattered punctures; ♀ mesonotum, scutellum in part and sterna of abdomen brown. [♂ unknown. Western Australia, ♀.] . . . . . *mayrii* Westwood, 1880 (= *bisecta* W. F. Kirby, 1882).
- 16. Legs and frontal crests entirely black; forewings with apical 2/3rds brownish infuscate; abdomen shining above with faint rugulous sculpture becoming obsolete on base and apex of each tergum. Blue Mountains, New South Wales, ♀. . . . . *bradleyi* sp. nov.
- Legs with the following parts yellowish white; apices of all femora, tibiae except apex of hind pair and basal tarsal segments of front and middle pair; frontal crests white marked; forewings with at most apical 1/3rd slightly yellowish; abdomen dull above all over with dense rugulous sculpture. Queensland, ♂♀. . . . . *dahlbomii* Westwood, 1880.

PERGA KONOWI, sp. nov.

♂♀. Colour bluish black with the following parts yellow; clypeus more or less, frontal crests, a thin strip on inner orbits and a spot behind the temples each side.

Wings smoky black, less dense at the base of the hindwing; in the ♂ the basal 1/3rd of the forewing and 2/3rds of the hindwing are clear; stigma brown; venation blackish brown.

Length: ♀, 20-22 mm.; forewing, 17 mm.; antenna, 3 mm.

♂, 18 mm.; forewing, 15 mm.; antenna, 3 mm.

Pubescence almost obsolete on head, thorax and dorsum of abdomen.

Head shining but with dense punctures on temples; punctures sparse and widely separated on hind orbits, vague and obsolete on clypeus, labrum and postocellar region; labrum obtusely rounded in front; clypeus flat almost truncate in front, very slightly emarginate in the middle; flagellum of antenna about as long as distance between the eyes; malar space a little shorter than the pedicel of the antenna; postocellar region about as broad as long, parallel sided and raised above the level of the temples on each side; POL equal to or slightly less than OOL and hind ocelli much closer together than the distance of one from the hind margin; frontal crests wider apart than the breadth of one; supra clypeal area with a medial longitudinal groove.

Thorax: Pronotum with regular widely-spaced punctures; mesonotum

coarsely and densely punctured, especially in the front and middle, where many of the punctures are confluent, but unpunctured interspaces are present, especially on side and hind parts of side lobes; scutellum, shining with very vague coarse punctures, only slightly convex, and considerably broader behind than long (about 4:3); mesopleura with mesepisternum regularly and evenly punctured on the upper  $\frac{2}{3}$ ; punctures in the middle are separated and not confluent, though in the front and below some of the punctures are almost contiguous; surface between punctures and on other parts of pleura are smooth and shining with only vague sculpture; tarsi of hind leg together equal to about  $\frac{2}{3}$  length of tibia; basitarsus greater than length of three and nearly as long as four following tarsal segments together.

Abdomen with the terga transversely rugulous; terga 1, 8 and 9 with a few scattered punctures. ♀. Sawsheath bearing hairs that are incrassate apically and toothed at the end (fig. 32). Saw as in *P. affinis* W. F. Kirby (fig. 39).

New South Wales: Euston "Mallee scrub", bred from larvae on *Eucalyptus transcontinentalis* Maiden, in 1933. 1 ♀ (holotype), 1 ♂ (allotype) in British Museum, 2 ♀♀ in Australian Museum, Sydney (W. W. Froggatt).

South Western Australia: Narrogin, 1 ♀ (Perth Museum, 1934—1226). (Has yellow labrum, front tibia, except base, middle basal portion of middle and hind tibiae, bases of front and middle tarsal segments and spot on mesepisternum; puncturation heavier than in type.)

North Western Australia: Raeburn, 1 ♀ (Perth Museum, 1922—680). (Has POL greater than OOL and front orbits yellow margined.)

*PERGA BRADLEYI*, *sp. nov.*

♂. Colour bluish black with the pronotum, scutellum and a spot on the hind orbit yellowish white.

Wings: Apical  $\frac{2}{3}$  of forewings fuscous, base of the same and hindwings almost hyaline; stigma and venation piceous.

Length: 16.5 mm.; forewing, 13.5 mm.; antenna, 1.4 mm.

Pubescence on thorax and abdomen (except 1st tergum) very sparse.

Head shining with coarse punctures above the antennae especially in and bordering the depressions; there are, however, shining interspaces between the punctures especially on the raised portions such as the middle of the postocellar region and also on the hind orbits; clypeus slightly emarginate in the middle; flagellum of antenna about as long as the distance between the antennal sockets; malar space as long as pedicel of antenna; segments 4 and 5 of antenna about twice as broad as long; distance between eyes greater than length of an eye; frontal crests large and broad so that the distance between them is about  $\frac{1}{2}$  the breadth of one; postocellar area convex with vague curved vertical furrows; breadth to length of postocellar area in proportion of about 4:3; POL = OOL; distance between hind ocelli about  $\frac{1}{2}$  distance of one from hind margin of head.

Thorax shining with coarse dense puncture in the middle of the front lobe of the mesonotum and the middle of each of the side lobes; a few scattered punctures occur on the pronotum, the sides of the scutellum and the middle of the mesopleura; scutellum a little shorter in the middle than

the breadth of the hind margin; hind tarsi about  $\frac{1}{2}$  as long as hind tibia; basitarsus longer than next 2 tarsal segments together.

Abdomen shining with faint transverse rugulous sculpture especially on the upperside in the middle of each tergum; apex and base of middle terga unpunctured; saw much as in fig. 39.

New South Wales: Blue Mountains, 1 ♀ (A. Musgrave), "*Perga dahlbomii* Westwood, ♀", id., by R. J. Tillyard" (Australian Museum).

PERGAGRPTA, *gen. nov.*

Head as in *Perga* except that the antenna is never shorter than the distance between the eyes and never longer than the breadth of the head; POL is generally less than OOL, the postocellar is convex and defined by subparallel vertical furrows except in the *spinolae* and *bella* groups where the head is almost flat behind.

Thorax; Scutellum (figs. 16, 17 and 18) generally with well developed hind lobes which at least reach back beyond the level of the middle of the hind margin of the scutellum; scutellum with a medial longitudinal furrow at least indicated and in the *castanea* group very deep and clear.

Wings (as in figs. 9 and 11) with stigma always much narrower than radial cell of forewing and  $\frac{1}{2}$  to  $\frac{2}{3}$  as long as radial cell; 3rd cubital cross-vein of forewing strongly angled in the *castanea* and *esenbeckii* groups but nearly straight in the *spinolae* and *bella* groups, so that here it is usually directed actually to the apex of the stigma; 4th cubital cell longer than the rest of the cubital cells together; ♂♂ may or may not have special hairy patches on the underside of the forewings.

Legs and abdomen as in *Perga* except that in no species have incrassate hairs been seen on the sawsheath; several of the ♂♂ have fine pubescence developed on the basal terga. Saw in the *castanea* group much as in fig. 39; in the *bella* group as in fig. 43; in *P. bicolor* Leach as in fig. 42; in the other much as in fig. 44. Type, *Perga bella* Newman.

Key to PERGAGRPTA species.

1. 3rd cubital cross-vein almost straight and directed towards the apex of the stigma; scutellum with only a vague medial furrow. . . . . 2.
- 3rd cubital cross-vein strongly angled and directed towards a point on the stigma about  $\frac{1}{3}$ rd from its apex; scutellum divided medially by a distinct and deep furrow (*castanea* group). . . . . 4.
2. Mesopleura smooth between widely scattered punctures; cubital cell in hindwing only  $\frac{1}{2}$  to  $\frac{2}{3}$  as long as the free end of the cubital vein. . . . . 3.
- Mesopleura densely rugulously punctured in the middle; cubital cell in hindwing almost as long as the free end of the cubital vein (*bella* group). . . . . 10.
3. Postocellar area clearly defined laterally and convex so that it is raised above the level of the temples each side and when viewed from behind, the hind margin of the head is definitely curved (*glabra* group). . . . . 8.
- Postocellar area not clearly margined laterally and flat so that when viewed from behind, the hind margin of the head appears almost as a straight line (*spinolae* group). . . . . 14.

4. Mesopleura shining between large clearly defined punctures; pronotum, scutellum and mesopleura of the same chestnut brown colour as the rest of the thorax; cubital cell in hindwing as long as the apical free end of the cubital vein; ♂ with black hairy patches very conspicuous in the 1st cubital cell of both wings. [Legs entirely yellowish white; apical half of forewing strongly suffused with brown; basal half and hindwing slightly yellowish. Postocellar area about as long as broad; upper part of head, pronotum and front of mesonotum dull with dense punctures and short black hairs, but there is a shiny patch on the temples just each side of the vertical furrow behind; saw Morice, plate xiv., fig. 10.] New South Wales and Victoria, ♂ and ♀. . . . . *castanea* W. F. Kirby, 1882.
- Mesopleura above dull with dense rugulous punctures; pronotum, scutellum and mesopleura yellowish white in contrast to the rest of the thorax which is brown; cubital cell in hindwing much shorter than the apical free end of the cubital vein; ♂ with hairy patch well marked in the 1st cubital cell of the forewing but absent from the hindwing. [The larva of one of the species in this group was described by Froggatt (1890, p. 285).] . . . . . 5.
5. Postocellar area longer than broad and of the same breadth behind as in front; upper part of head dull with very small punctures set close together and evenly. [Hind basitarsus about equal to the following tarsal segments together; mesonotum densely punctured, especially pronotum which is covered with very fine punctures. Pronotum with side angles white; abdomen showing metallic gleam in ♀; wings densely suffused with yellow; hind femur dark chestnut; tibiae and tarsi yellowish white; saw Morice, plate xiv., fig. 9.] South Queensland, ♂ and ♀. . . . . *polita* Leach, 1817.
- Postocellar area as broad as long and broader behind than in front; upper part of head with fewer punctures and these are concentrated mostly near the lateral furrows, leaving unpunctured spaces in the middle of the postocellar area and the sides of the temples. . . . . 6.
6. Hind basitarsus about as long as the rest of the tarsal segments together; wings strongly yellow infuscate throughout; mesonotum behind shining with widely spaced punctures; head behind very shining with scattered punctures. [Postocellar area about as long as broad.] South Australia, ♂ and ♀. . . . . *condei* sp. nov.
- Hind basitarsus shorter than the length of the rest of the tarsal segments together; wings almost hyaline; mesonotum in the middle, just in front of the scutellum, dull with dense punctures and surface roughness. . . . . 7.
7. Postocellar area as long as broad; pronotum with the lower front half brown; hind tibia brown on apical  $\frac{1}{4}$ ; ♀ forewing with a brownish infuscation just under the stigma; ♂ with a slight infuscation in the cubital cell of the hindwing. [This species and the one that follows may be considered later as only geographical races of one species.] North Queensland, ♂ and ♀. . . . . *turneri* sp. nov.
- Postocellar area broader than long; pronotum entirely pale except for a spot at the front; hind tibiae not brown on apical  $\frac{1}{4}$ ; ♀ forewing equally yellowish hyaline without any infuscate patch under the

- stigma; ♂ without any infuscation in hindwing. Victoria, ♂ and ♀. . . . . *hackeri* sp. nov.
8. Basal tergites of abdomen shining, with rugulous sculpture almost absolute; hind basitarsus clearly longer than 3 following tarsal segments together. . . . . 9.
- Basal tergites dull with strong rugulous sculpturation; hind basitarsus not longer than 3 following tarsal segments together. [Abdomen red, except the base and apex which are black; head with antenna, femora and stigma or wings black; hind tibia and tarsi red; forewing brownish infuscate in apical half, especially in radial cell, while the base and the hindwing are yellowish hyaline; saw Morice, plate xiv., fig. 11.] West Australia, ♀. . . . . *esenbeckii* Westwood, 1880.
9. Antenna and legs (except coxae) black; forewing equally brownish infuscate throughout. [Stigma black to brown; saw Morice, plate xv., fig. 4.] Queensland and New South Wales, ♀. . . *glabra* W. F. Kirby, 1882.
- Antenna and legs (except hind tibia, base of hind tarsi and apex of hind femur) brown; forewing brownish infuscate in apical half only, the base being hyaline. [Stigma yellow; saw as in *glabra* W. F. Kirby. Perhaps a subspecies of *glabra* W. F. Kirby.] Victoria, ♀. . . . . *malaisei* sp. nov.
- Basal vein in forewing yellow; without an unpunctured patch at the back of the vertical furrow bordering on the postocellar area. . . . 11.
10. Basal vein in forewing black; each side of the postocellar area in the hind part of the vertical furrow there is at least a small unpunctured patch. [Varying in ground colour from forms entirely yellow to forms entirely black.] . . . . . 12.
11. Abdomen yellow either entirely or more or less infuscate on the apical half; wings strongly yellowish, especially at the base; vertical furrows clearly defined; postocellar area U-shaped, and in front raised above the level of the temples each side. [Morice separated *P. hartigii* Westwood and *P. gravenhorstii* Westwood on trivial colour characters and on their supposed very distinct saws. (Morice, plate xv., figs. 8 and 9.) Two specimens in the British Museum named as *P. hartigii* Westwood by Morice have had their saws extracted and I have not been able to trace what became of the saws; a third specimen, agreeing with these two in every external character, had its saws intact and they agree exactly with those figured by Morice for *P. gravenhorstii* Westwood. It is most probable that *P. hartigii* Westwood is only a colour form of *P. gravenhorstii* Westwood, and that the saw illustrated by Morice as that of *P. hartigii* Westwood, really belonged to a specimen of some quite different species.] Victoria and New South Wales, ♂ and ♀. . . . . *gravenhorstii* Westwood, 1880 (? = *hartigii* Westwood, 1880).
- Abdomen black, ornamented at the sides with creamy white patches, each patch occupying the middle of the part of the tergum that is bent over on to the ventral side; wings only yellowish hyaline; vertical furrows almost obsolete; postocellar region V-shaped, even in front hardly raised above the level of temples each side. New South Wales, ♀. . . . . *nigra* sp. nov.
12. Postocellar area and temples flat, shining and sparsely punctured with large shining interspaces; mesopleura densely punctured in the middle

but shining with sparse punctures at the sides; smaller species (12 mm.). Victoria, ♀. . . . . *rossi* sp. nov.

- Postocellar area and temples dull and densely punctured in parts; mesopleura above irregularly punctured all over with dull rugulous surface between the punctures; larger species (14-20 mm.). . . 13.
- 13. Scutellum shining with large unpunctured areas at the sides behind, and the whole is convex so that the middle of the scutellum is clearly above the level of the top of the hind lobes (when viewed from the side). South Australia, ♀. . . . . *rohweri* sp. nov.
- Scutellum irregularly punctured all over with a more conspicuous medial groove, so that the middle of the scutellum is more concave and is clearly below the level of the top of the hind lobes. [In this species there is considerable variation not only in colour, but also in the development of the crests between the antennae; saw (fig. 43 and Morice, plate xv., figs. 5, 6 and 7).] The larva was described by Froggatt, 1890, p. 288, as *Perga foersteri* Westwood, on *Eucalyptus corymbosa*. Victoria and New South Wales. . . . *bella* Newman, 1831 (= *rubripes* Rohwer, 1910, and ? *montana* Forsius, 1935, *foersteri* Westwood, 1880, and . . . . . *divaricata* W. F. Kirby, 1893).
- 14. Abdomen entirely black; scutellum (fig. 17) unpunctured and in shape more convex behind so that (viewed from the side) the middle is raised up well above the height of the tops of the hind lobes; costa and stigma black. [Saw (Morice, plate xv., fig. 10). The larva was described by Froggatt, 1890, p. 285, as *Perga chalybea* Froggatt, on "white gum".] Victoria. . . . . *bicolor* Leach, 1817.
- Abdomen in part yellow or brown; scutellum (fig. 18) clearly punctured, and, in shape, more convex in front and flattened behind so

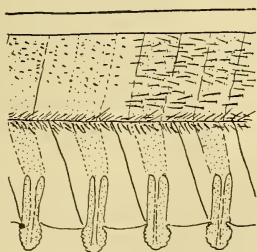


Fig. 40.

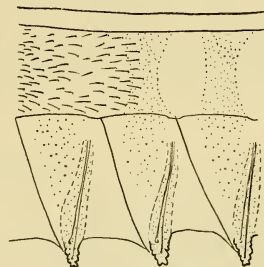


Fig. 41.

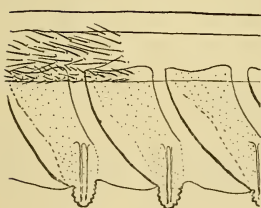


Fig. 42.

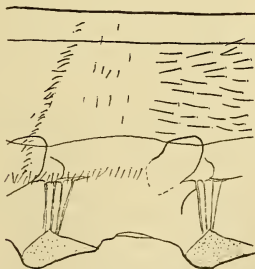


Fig. 43.

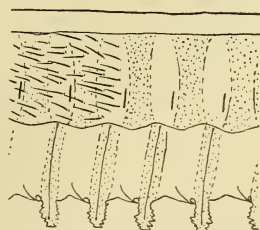


Fig. 44.

- that the hind lobes reach, at their tips, above the level of the middle of the scutellum; costa and stigma yellow. . . . . 15.
15. ♀♀. . . . . 16.
- ♂♂. . . . . 17.
16. Abdomen black or brown with two yellow bands, one covering tergum 2 and the other convexing terga 7, 8 and 9. [Specimens from Victoria are black with yellowish-white labrum, clypeus, cheeks, hind orbits, frontal cushions, hind margin of pronotum, more or less bases of tibiae, tarsi and hind coxae, in addition to the pale bands on the abdomen; specimens from Sydney, New South Wales, show the black giving place to brown, noticeably on the antenna, head, mesonotum, mesopleura and underside of abdomen; in specimens from Queensland this has gone still further, the black being largely replaced by reddish-brown and on the underthorax the yellow of the upper part of the mesopleura is separated by a white band from the brown lower part; saw (Morice, plate xv., fig. 3). The larva of this species was described by Froggatt, 1890, p. 287, as *Perga latreillei* Leach, on *Eucalyptus corymbosa*.] Queensland to Victoria, ♀. . . . *spinolae* Westwood, 1880.
- Abdomen usually yellow or brown; it may be partly or entirely black but is not decisively banded with yellow as above. [A very variable species both in colour and form; it may prove later to be a complex of several species; saw (fig. 44 and Morice, plate xv., fig. 2); scutellum, fig. 18.] Queensland to South Australia, ♀. . . . *latreillei* Leach, 1817, . . . . (= *dalmanni* Westwood, 1880, and ? *titschacki* Forsius, 1929).
17. Four or five basal terga of abdomen, each yellow in the middle but banded on the front and hind margins with dark brown; forewing with a dark scaly patch under the stigma occupying the two first cubital cells and the basal half of the radial cell. Queensland to Victoria, ♀. . . . . *spinolae* Westwood, 1880.
- Abdomen not so banded; forewing without a dark scaly patch under the stigma. Queensland to South Australia, ♂. . . . . *latreillei* Westwood, 1880.

PERGAGRPTA CONDEI, sp. nov.

♀. Colour chestnut with the following parts yellowish white; labrum, clypeus, antennal crests, antenna, inner and outer orbits, vertical furrows, pronotum, the unpunctured hind portion of the middle lobe of the mesonotum, the lateral surface of the mesonotum, the scutellum (except the hind margin and lobes), upper two-thirds of mesopleura, the metapleura, legs (except for the apex of the hind femur and the joints of the tarsal segments), a large lateral spot behind the stigma on the side of each tergum (except on the first and last terga).

Wings strongly yellowish infusate, slightly more hyaline at apex; stigma, costa, venation and upper half of first cubital cell brown.

Length: 25 mm.; forewing, 21 mm.; antenna, 4 mm.

Head above shining with sparse punctures and the whole appears very flat forming a sharp angle behind when viewed from the side; postocellar region is raised above the temples at the sides but is not clearly defined at the sides; it is about as long as broad, broadening slightly behind and with a conspicuous longitudinal medial furrow.

Thorax with pronotum, front lobe of mesonotum (except hind portion) and upper 2/3rds of mesopleurae densely punctured and dull; side lobes of mesonotum and scutellum shining with very sparse vague punctures; scutellum broader than long, with well-developed lobes, and longitudinally divided by a very deep furrow, deepening and broadening behind; hind basitarsus about as long as the rest of the tarsal segments together.

Wings with 3rd transverse cubital vein in forewing angled and oblique so that it is directed towards a point basal to the apex of the stigma at a distance of at least a quarter the length of the stigma.

Abdomen normal with saw not distinguished from that of *P. polita* Leach (Morice, plate xiv., fig. 9).

South Australia, Adelaide, 1 ♀ (holotype) (British Museum 1919-64), "collected for me by a schoolboy", R. C. L. Perkins.

*PERGAGRPTA TURNERI, sp. nov.*

♀. Colour chestnut with the following parts yellowish white; labrum, clypeus, antennal crests, antennae, inner and outer orbits, vertical furrows, posterior half of pronotum, unpunctured hind portion of the middle lobe of the mesonotum, a mark on the lateral surface of the mesonotum, the front 2/3rds of scutellum, upper 2/3rds of mesopleurae, trochanters, tibiae (except on the hind legs, the apical quarter) and tarsi of legs, a small lateral spot behind the stigma on the side of each tergum.

Wings with a slightly yellowish infuscation just under the stigma of the forewing in the radial and first three cubital cells; stigma, costa, venation and upper half of first cubital cell brown.

Length: 19 mm.; forewing, 18 mm.; antenna, 2.5 mm.

Head above shining between the punctures which are dense in the neighbourhood of the vertical furrows; POL slightly less than OOL (about 11:12); postocellar region raised above the temples each side and is about as long as broad, broadening slightly behind and with a conspicuous longitudinal medial furrow.

Thorax with pronotum, front lobe of mesonotum (except hind portion) and upper 2/3rds of mesopleura densely punctured and dull; scutellum and side lobes of mesonotum with sparse vague punctures except in the middle, immediately in front of the scutellum, where the puncturation is dense and the surface dull; scutellum broader than long with well-developed lobes and longitudinally divided by a very deep furrow, deepening and broadening behind; hind basitarsus longer than the three following but not so long as all the following tarsal segments together.

Wings with the third transverse cubital vein in forewing angled and oblique so that it is directed towards a point basal to the apex of the stigma at a distance of at least a quarter the length of the stigma.

Abdomen normal with saw not distinguished from that of *P. polita* Leach; ♂ as in ♀, but has a scaly patch in the middle of the radial cell on the underside of the forewing.

Length: 12.5 mm.; forewing, 11 mm.; antennae missing.

Queensland: Mackay, 1 ♀ (holotype), G. Turner (British Museum, 1892-16); 1 ♀, ii., 1892 and 2 ♀♀, xi., 1892, R. E. Turner; Cairns, 1 ♂ (allotype), R. E. Turner (B.M., 1910-225).

*PERGAGRAPTA HACKERI*, sp. nov.

♀. Colour as in *P. turneri*, sp. nov., except that the pronotum is much paler, the chestnut being limited to the middle front portion, the hind tibiae are not brown on their apical quarter, at the most being slightly discoloured only at the extreme apex, while the forewing is slightly yellowish hyaline throughout (not only under the stigma).

Length: 19-22 mm.; forewing, 17-18 mm.; antenna, 3 mm.

Head as in *P. turneri*, sp. nov., but that the postocellar region is actually slightly broader than long.

Thorax and abdomen as in *P. turneri*, sp. nov.

♂ as in ♀, but has a scaly patch on the underside of the forewing beneath the stigma as in *P. turneri*, sp. nov.

Length: 16-20 mm.; forewing, 14-17 mm.; antenna, 3 mm.

Victoria: 1 ♀ (holotype), Melbourne, R. E. Turner (British Museum, 1915-86); 1 ♀, ix., 1901, R. E. Turner (B.M., 1909-123); 1 ♀ (B.M., 1850-7); 1 ♂ (allotype) (B.M., 1858-73); 1 ♂, 1 ♀, near Melbourne; 1 ♀, Noble Park, C. Oke; 1 ♂, Nairnsdale, G. Easton, iii., 1925, Dr. Sweet; and 1 ♀ without date. (These five in the National Museum, Melbourne.)

*PERGAGRAPTA MALAISEI*, sp. nov.

♀. Colour reddish-brown except for the following parts which are fusions; tips of mandibles, furrows behind the clypeus and surrounding the frontal area, front of anterior mesonotal lobe, a vitta on each of the side lobes, apices of femora, most of the hind tibia and basitarsus, middles of the dorsum of the abdomen on terga 3-8.

Wings hyaline, with only apical half of forewing tinged with brown; costa, subcosta, basal and median veins mostly blackish brown; stigma and rest of venation brown.

Length: 12-14 mm.; forewing, 10-12 mm.; antenna, 2 mm.

Head, face and outer orbits unpunctured, but upper surface of head densely punctured; postocellar area clearly defined at sides and raised above the temples each side, broader than long in proportion of about 15:12; glabrous and with shining interspaces in the raised middle part, densely pubescent on the sides and depressed parts of temples near vertical furrow.

Thorax: Pubescence very short and sparse on mesopleura and on side lobes of mesonotum limited to the depressed medial parts; dense on the front lobe and scutellum; front lobe of mesonotum shining with irregularly placed punctures in the middle; more densely punctured at the sides; side lobes shining with scattered punctures becoming more dense medially behind; scutellum with shining interspaces between punctures, flat above with no clear longitudinal medial furrow, but with the hind lobes well-developed and extending backwards far beyond the middle of the hind margin of the scutellum; basitarsus of hind legs equal to about the three following tarsal segments together; wings with third transverse cubital vein of forewings not sharply angled, but slightly oblique only and directed towards the extreme apex of the stigma. Abdomen with pubescence very sparse and mostly on apical and basal terga only; usual transverse wrinkles to the terga are almost obsolete; saw as in *Perga glabra* W. F. Kirby (Morice, 1919, plate 15, fig. 4).

Victoria: 1 ♀ (holotype), Windsor, 21, xii., 1909, G. F. Hill (National Museum, Victoria), 1 ♀, Gippland (British Museum).

*PERGAGRAPTA NIGRA, sp. nov.*

(= *Perga bella* var. *nigra* Rohwer, in Morice, 1919, p. 278, footnote.)

♀. Colour black with the following parts creamy white; hind margin of clypeus, inner and outer orbits, patch in the hollows each side of the post-ocellar area, flagellum of antenna, hind margin of pronotum, hind unpunctured portion of front mesonotal lobe, stripe on the upper margin of the lateral surface of the middle lobes and the lateral ridge, triangular patch on scutellum (the hind margin and lobes of the scutellum forewing the base of the triangle, the apex reaching the front margin) a transverse band across the mesopleurae, the upper margin of the mesonotum, trochanters bases of tibiae and tarsi, and a patch on each tergum occupying most of the central part of the portion that is bent over on to the ventral side; the following parts are yellow: the mandibles (except their tips), the labrum, part of the cheek behind the pale outer orbits, margins of pale vertical spots, femora (except black extreme apex of hind pair) and apices of tibiae.

Wings slightly yellowish hyaline throughout; stigma costa and venation yellow.

Length: 15 mm.; forewing, 14 mm.; antenna, 2.5 mm.

Punctuation very dense and close without interspaces on upper part of head, pronotum and mesonotum (except the small pale hind portion of the front lobes and the lateral surfaces of the hind lobes) including the scutellum; mesopleura likewise very densely punctured above but less densely so at extreme margins and with large shining interspaces on lower third; abdomen with dense transverse wrinkles above, but these become obsolete below ♀.

Pubescence well-developed on the heavily punctured areas of the head and thorax; very sparse elsewhere.

Head with POL:OOL in the proportion of about 9:10 with vertical furrows almost obsolete; postocellar area V-shaped, being narrowed behind on a level with the temples each side behind and in front very little raised above them.

Legs with the hind tarsi together about 2/3rds length of the hind tibia.

Thorax: Scutellum slightly convex with a medial transverse depression; hind lobes well-developed extending back further than the middle of the hind margin.

Wings with third transverse cubital vein in forewings slightly oblique, not angled, and directed towards a point almost at the apex of the stigma; cubital cell in hindwings very little shorter than the free apical end of the cubital vein.

Saw as in *bella* group (Morice, 1919, plate xv., fig. 5).

New South Wales: Cumberland, 1 ♀, R. E. Turner, British Museum, 1909—220, "*Perga bella* var. *nigra*, type Rohwer", MSS. label.

*PERGAGRAPTA ROSSI, sp. nov.*

♀. Colour yellowish-brown with the following parts black: apex of mandibles, front of side lobes of mesonotum, lower  $\frac{1}{4}$  of mesopleura, meso-

sternum and more or less terga 2 to 6 medially and sterna of abdomen; creamy-white are the following: spot each side of clypeus, inner orbits between clypeus and eye, outer orbits, antennal crests, a patch each side of the postocellar area, hind margin of pronotum, tegulae, hind angle of front mesonotal lobe, stripe on lateral surface of side mesonotal lobes, front margin and transverse band across middle of mesopleura, metapleura, patch on the lateral portion of each of the terga 2-8.

Wings yellowish hyaline; subcosta, median and basal veins black; stigma costa and rest of venation yellow.

Length: 12 mm.; forewing, 10 mm.; antennae missing.

Head with POL:OOL in proportion of about 3:4; very shining above on the temples and postocellar region with sparse scattered punctures; whole surface flat and slightly rounded without any definite raised postocellar area and without definite vertical furrows, which are indicated mostly by slightly denser puncturation.

Thorax dull with dense close punctures on pronotum; mesonotum with shining interspaces especially on hind angle of front lobe, raised parts and lateral surfaces of side lobes and scutellum; mesopleura with coarse dense punctures in the middle of the upper portion; round the margins and on the lower 1/3rd the punctures are scattered with large shining interspaces; scutellum broader than long, convex with a medial longitudinal depression, and well developed hind lobes.

Legs with hind tarsi about 2/3rds length of hind tibia.

Wings with third transverse cubital vein in forewing slightly oblique, not angled, and directed towards a point almost at the apex of the stigma; cubital cell in hindwing about 1/3rd shorter than the free apical end of the cubital vein.

Abdomen with the usual strong transverse wrinkles on the dorsum.

Saw as in *bella* group (Morice, 1919, plate xv., fig. 5).

Victoria: Windsor, 1 ♀, xii., 1909, B. F. Hill (National Museum, Victoria).

PERGAGRPTA ROHWERI, sp. nov.

♀. Colour yellowish-brown with the following parts creamy-white: a spot each side of clypeus, inner orbits between antenna and eye, outer orbits, antennal crests, flagellum of antenna, spot each side of postocellar area behind, hind margin of pronotum, hind angle of front lobe of mesonotum, ridge on lateral surface of side lobes of mesonotum, middle of scutellum, upper 2/3rds of mesopleura (except for a patch occupying the middle and spreading to the upper margin), upper margin of mesosternum, metapleura, trochanters and on the abdomen a patch on the ventral portion of each of the terga 2-8; in the holotype the black is confined to the extreme apices of mandibles, the lower 1/4th of mesopleura with mesosternum the base of the hind coxae and the middle of terga 2-4; in the paratype the black is much more extensive, the following being also black: the front margin of the pronotum with the prosternum, a vitta on each of the side mesonotal lobes, the epimeron of the mesopleurae, and the first 7 segments of the abdomen except for the above-mentioned creamy white patches on the ventral portions of the sterna.

Wings yellowish hyaline; subcosta, median and lateral veins black; stigma, costa and rest of venation yellow.

Length (holotype), 15 mm.; forewing, 14 mm.; antenna, 2 mm. (paratype), 20 mm.; forewing, 18 mm.; antennae missing.

Head above very flat, the postocellar area behind being almost on the same level as the temples each side while in front where the area becomes much broader it is slightly convex; behind it is ill-defined, the vertical furrows which are clearly depressed in front being obsolete behind and replaced by a small shining unpunctured pale patch.

Thorax with mesonotum heavily punctured, though on the side lobes and scutellum there are considerable shining interspaces; mesopleura on the upper 3/4ths with large regular punctures separated by finally sculptured interspaces; lower 1/4th with denser finer punctures; scutellum roundly convex without apparent medial transverse furrow so that the tops of the hind lobes, though well developed are yet below the level of the middle of the scutellum when viewed from the side.

Legs with hind tarsi equal to about 2/3rds length of hind tibia.

Wings with third transverse cubital vein of forewing slightly oblique, not angled, and directed almost towards the apex of the stigma; hindwing with cubital cell about equal in length to the free apical end of the cubital vein.

Abdomen with normal transverse wrinkles on dorsal surface and saw as in *bella* group (Morice, 1919, plate xv., fig. 5).

South Australia: Adelaide, 1 ♀ (holotype) (British Museum, 1853—8); 1 ♀ (paratype) (National Museum, Victoria).

#### PARAPERGA Ashmead, 1898.

Head when viewed from above, swollen behind the eyes but shorter behind the eyes than the length of an eye; palps as in *Perga*; clypeus flat and slightly emarginate in front; malar space slightly longer than pedicel of antenna; antenna 6-segmented, clavate, much shorter than breadth of head, but longer than clypeus; funiculum clearly longer than broad; segment 4 about twice as long as broad; frontal crests prominent but small, being much wider apart than the distance between them; POL less than OOL; postocellar area clearly defined by deep straight grooves each side but viewed from behind appears no higher than the swollen temples each side of the grooves.

Thorax with scutellum (fig. 13) narrowed behind so that it is about as wide behind as the medial length; the front portion that projects in front of the front angles is cut off by a deep transverse groove parallel to the hind margin and joining the two front angles; front and hinder portions being convex; medially there is a small groove bisecting the scutellum in half longitudinally; hind lobes large and projecting backwards clearly further than the middle of the hind margin does.

Wings with a short broad stigma about two-thirds as broad as the radial cell and only about half as long; 3rd cubital cross-vein only slightly curved and directed almost to the apex of the stigma; 4th cubital cell not quite 7/8ths as long as rest of cubital cells together; basal and 1st recurrent veins curved and subparallel, and both received in 2nd cubital cell (always?).

Legs with fore-tibia bearing a few incrassate hairs on the inside towards the apex; hind basitarsus only about one and a half times as long

as the following tarsal segment and less than the two following tarsal segments (segments 2 and 3); apices of hind legs missing.

Abdomen broad and rounded apically, strongly rugulously punctured; sawsheath expanding slightly behind where it is almost trifid, basally clothed with simple hairs; ♂ unknown.

Monotypic: West Australia. Type, *Perga jucunda* W. F. Kirby, 1882.

I have seen only a single ♀, the type of this species. It is a violaceous black insect about 15 mm. long with the temples, scutellum and sides of abdomen bright orange-red.

#### ANTIPERGA, genus nov.

Head when viewed from above, shorter behind the eyes than the length of an eye; clypeus slightly convex with the emarginate from margin inflexed; malar space slightly longer than the distance between the eyes; segment 4 less than twice as long as broad; POL:OOL varying; frontal crests prominent and each may be about as broad as the distance between them; postocellar area raised above the temples and margined laterally with subparallel vertical furrows; upper part of temples densely punctured in contrast with the unpunctured outer orbits.

Thorax with scutellum narrowed behind but yet generally wider behind than is the medial length; surface clearly convex with or without a vague medial groove; hind lobes small and projecting little or not at all beyond the level of the middle of the hind margin.

Wings generally partly brownish or yellowish; radial cell of forewing about twice breadth of stigma; 3rd cubital cross-vein usually curved; 4th cubital cell at least about as long as the rest of the cubital cells together; basal and 1st recurrent veins diverge strongly towards the stigma; ♂ with a special hairy patch under the stigma on the forewing occupying the base of the radial the 1st and 2nd cubital cells and spreading into the 2nd discoidal cell.

Legs with fore-tibia bearing a few incrassate hairs on the inside towards the apex; hind basitarsus scarcely as long as the next two tarsal segments together; tarsi 2/5ths to 4/5ths as long as hind tibia, being longer in ♂♂ than in ♀♀.

Abdomen short and stout, strongly rugulously sculptured above; ♀ sawsheath, viewed from above, expands very slightly behind, where it is truncate and basally it is clothed in simple fine hairs; ♀ saw fig. 40; ♂ abdomen above at least lightly pubescent but not densely so.

W. and S. Western Australia. Type, *Perga antiopa* Morice, 1919.

#### Key to ANTIPERGA species.

- |  |                         |
|--|-------------------------|
| 1. ♀♀. . . . .   | 2.                      |
| — ♂♂. . . . .  | 4.                      |
| 2. Antennae about twice as long as distance between their insertions; hind tarsi about 2/5ths as long as hind tibia. . . . .   | 3.                      |
| — Antennae about 1½ times as long as distance between their insertions; hind tarsi about 3/5ths as long as hind tibia. [Antenna entirely black; stigma brown; wings brownish infusate apically.] Western Australia, ♀. . . . . | <i>enslini</i> sp. nov. |

3. Stigma and flagellum of antenna black; wings brownish infuscate apically; femora and tibiae pale basally, but marked with black at their apices; mesonotum shining between coarse irregular punctures; POL less than OOL. South Western Australia, ♀. . *antiopa* Morice, 1919.
- Stigma and flagellum of antenna brown; wings hyaline; femora pale, slightly infuscate basally; tibiae pale with brownish apices; mesonotum dull with dense puncturation; POL greater than OOL. South Western Australia, ♀. . . . . *clarki* sp. nov.
4. Hind tarsi 4/5ths as long as hind tibia; puncturation very dense on head and thorax so that the surface is dull; abdomen brown above and yellow beneath. Western Australia, ♂. . . . . *enslini* sp. nov.
- Hind tarsi 3/5ths as long as hind tibia; puncturation coarse on head and thorax with shining interspaces; abdomen black above and white beneath. South Western Australia, ♂. . . . . *antiopa* Morice,

*ANTIPERGA ENSLINI, sp. nov.*

♀. Colour white; the following parts black: apices of mandibles, labrum, groove at base of clypeus, median fovea, upper part of head (except for frontal cushions, inner and outer orbits and vertical stripes), pronotum except for hind margin, mesonotum (except for margin of tegulae, outer stripes on side lobes and scutellum), lower 1/4th of mesepisternum, mesepimeron and mesosternum, bases of coxae, bases of front and middle femora and apices of hind tibial and all tarsal segments, dorsal surface of terga 1-6 with sawsheath and its neighbourhood.

Wings brownish, especially at apex of forewing, stigma and base of costa brown, apex of costa, subcosta and rest of venation black.

Length: 11.3 mm.; forewing, 9.5 mm.; antenna, 2 mm.

Puncturation on upper part of head and mesonotum mostly fine and regular but disappearing on the hind orbits and also in the middle of the postocellar region where is a large unpunctured area; mesepileura with irregular punctures and wide shining interspaces; scutellum very vaguely and shallowly punctured; abdomen densely transversely rugulous above; elsewhere insect is without definite punctures.

Head with POL:OOL in proportion of about 13:17; postocellar area a little broader than long, though not very clearly defined, and raised above the temples each side.

Thorax with scutellum small and slightly convex, longer in the middle than broad behind, with hind lobes very small and conical scarcely reaching so far back as the middle of the hind margin, puncturation very sparse and median groove almost obsolete; mesepisternum of mesopleura with scattered irregular punctures.

Wings with third transverse cubital vein of forewing slightly angled so that it is directed towards a point a little basal to the apex of the stigma.

Legs with hind tarsi together equal to about 3/5ths length of hind tibia; hind basitarsus very short, little longer than the following tarsal segment and shorter than the following two segments together.

Abdomen normal, saw not unlike that of *P. antiopa* Morice (fig. 40).

♂. Colour: Yellow with the following parts black: the ocellar region of the head; a spot behind the temples; the two basal antennal segments; the

front of the pronotum; the mesonotum except for a spot each side of the front lobe; the outer sides of the side lobes and the scutellum; metanotum with the first and base of the second terga of the abdomen; rest of abdominal terga 2-7 with the sides and apical half of each segment, flagellum, mesosternum, apices of hind tibia and tarsi brown.

Length: 10 mm.; forewing, 8 mm.; antenna, 2.8 mm.

Otherwise as in ♀ (except for sexual characters) save that the puncturation on the postocellar area is denser and the hind tarsi together are about 4/5ths as long as hind tibia.

Western Australia: Perth, 19 ♀♀ (including holotype), 25.ii. to 12.iii., 1936, 1 ♂ (allotype) and 2 ♀, 16 to 29.iii., 1936, "*on Melaleuca*", R. F. Turner (B.M., 1936—28).

Mr. Turner tells me that gregarious black larva which he assumed to belong to this species were abundant on *Melaleuca* a few weeks later in the same locality, near Perth, where he had collected the adults.

ANTIPERGA CLARKI, *sp. nov.*

♀. Colour yellow; the following parts black: apices of mandibles, front margin of labrum, furrow at base of clypeus, median fovea, upper part of head (except for the inner orbits, pale band along the vertical furrows joining them, and the outer orbits), and two basal segments of antenna; medial narrow part of pronotum, mesonotum (except the lateral faces and the scutellum) the lower third of the mesopleura with a spot on the mesepimeron, the mesosternum, the metanotum at the sides, and the basal half of the front and middle femora; dorsal portions of terga 1 and 2 at the sides and the furrow between them, dorsal portions of terga 3-6, the terga of 7 and 8, the whole of 9 and apical segments with sawsheath, as well as the apical ½ of sterna 3-6.

Wings hyaline, with stigma, costa and venation brown.

Length: 12 mm.; forewing, 10 mm.; antenna, 2.5 mm.

Puncturation on upper part of head and mesonotum very fine, close and irregular; on pronotum the punctures are shallower with interspaces; scutellum with vague almost obsolete punctures; mesopleurae with dull interspaces between large regular punctures; abdomen above with close transverse striae; rest of insect without regular punctures.

Head with POL:OOL in proportion of about 20:17; postocellar area 5/6ths as long as broad, clearly defined with deep straight vertical furrows, and raised well above the temples each side.

Thorax has scutellum strongly convex, much broader behind than its total length, divided longitudinally by a clearly defined medial furrow, and with the hind lobes very small so that they do not reach so far back as the middle of the hind margin.

Wings with third transverse cubital vein of forewing strongly angled so that it is directed towards a point basal to the apex of the stigma by a distance of about 1/4th the length of the stigma.

Legs with hind tarsi together equal to about 2/5ths the length of hind tibia; basitarsus about as long as the two following tarsal segments together.

Abdomen normal, saw not distinguished from that of *P. antiopa* Morice (fig. 40).

West Australia: Perth, 1 ♀, J. Clark (Queensland Museum, Brisbane).

## PSEUDOPERGA Guérin, 1845.

Redescription: Length of head behind the eyes when viewed from above is as great or greater than the length of the eye from the same viewpoint (fig. 24); frontal crests small; palps as in *Perga*.

Head sub-parallel sided or swollen behind the eyes; clypeus flat; malar space twice length of pedicel and longer than diameter of front ocellus; antenna clavate, 6-segmented and less in length than the distance between the eyes; segment 4 not more than twice as long as broad; funicle about as broad as long; postocellar area subparallel sided and clearly defined OOL greater than or equal to POL in ♀; less than POL in ♂.

Thorax: Scutellum broader behind than long, flat or even slightly concave in the middle and sparsely punctured, but in *P. ferruginea* Leach, slightly convex with a vague medial furrow and heavily punctured; hind lobes normally very short and not projecting so far back as the middle of the hind margin of the scutellum, but sometimes (in *P. ferruginea*) they extend further back than the middle of the hind margin.

Wings with a very large stigma about as broad in forewing as the greatest breadth of the radial cell (fig. 10); 3rd cubital cross-vein of forewing strongly bent and directed towards a point on the stigma about a third from the apex; 4th cubital cell longer than the rest of the cubital cells together; basal and 1st recurrent veins converge slightly towards the stigma; males without definite hairy patches in the wings.

Legs with fore-tibia bearing a few incrassate hairs on the inside towards the apex; hind basitarsus longer than two following tarsal segments together; hind tarsal segments together at least two-thirds as long as hind tibia.

Abdomen in female tapering and acuminate apically; the narrow 9th tergum projects beyond the sawsheath; sawsheath clothed with simple hairs; ♀ saw as in fig. 11; ♂ abdomen slightly pubescent above.

In this genus occur the extraordinarily developed social habits of larvae and maternal care of them by their parents (see Lewis, 1837 and 1865).

Queensland, N.S.W., Victoria, S. and W. Australia. Type, *Perga lewisii* Westwood.

## Key to PSEUDOPERGA species.

1. Claw-bearing hind tarsal segment measured along upper side, longer than segments 3 and 4 together; hind tarsi together only about 2/3rds to 3/4ths as long as hind tibia. . . . . 2.
- Claw-bearing hind tarsal segment less than segments 3 and 4 together; hind tarsi together from 7/8ths to about the same length as the hind tibia. . . . . 4.
2. Mesopleura with regular widely-spaced round punctures; POL about equal to OOL in ♀. . . . . 3.
- Head mesonotum and upper 3/4ths of mesopleura dull and rugged with coarse irregular puncturation; POL less than OOL. [Yellowish brown species; apices of hind femur, tibia and tarsi dark brown; wings yellowish; ♂ with upper part of head (except vertical area), vittae on mesonotal lobes and narrow bands on abdomen black.] Western and South Australia, ♀ and ♂. . . . . *rugiceps* Forsius (1927).

3. Antenna very short, so that the flagellum is less than the length of the front margin of the clypeus; head and mesonotum very shining with only sparse punctures. [Reddish-brown species often with stripe behind eye, vittae on mesonotal lobes, apices of hind femur and hind tibiae with whole of hind tarsi black; ♂ unknown.] ? New South Wales and Western Australia, ♂ and ♀. . . . . *lucida* Rohwer (1910).
- Antenna longer, so that the flagellum is greater than the length of the front margin of the clypeus; head and mesonotum shining between coarse punctures (notably the temples each side of the postocellar region and the sides of the front lobe of the mesonotum are densely punctured). [Head above, with antenna, mesonotum, legs and abdomen above deep brown; scutellum, under-thorax and abdomen beneath yellow; ♂ unknown.] Western Australia, ♀. . . . *moricei* Forsius (1927).
4. Antenna very short so that it is no longer than the front margin of the clypeus and the flagellum is less in length than the distance between the insertions of the antennae. . . . . 5.
- Antenna longer than front margin of clypeus and flagellum much longer than the distance between the insertions of the antennae. . . . . 6.
5. Scutellum convex and generally densely punctured; its hind margin depressed; the hind lobes well-developed and extending backwards further than the middle of the hind margin; ♀ deep chestnut colour all over, darker on the head, mesonotum, hind femur and hind tibia with deeply brownish wings; ♂ has head above and mesonotum black with under parts usually yellowish brown; hind basitarsus shorter than next two tarsal segments together. Saw (Morice, plate xiv., fig. 14). Queensland to Victoria, ♂ and ♀. . . . . *ferruginea* Leach (1817). (= *scabra* Newman, 1846, *newmanni* Westwood, 1880, *sellata* W. F. Kirby, 1882, and *froggatti* Rohwer, 1910.)
- Scutellum flat or slightly concave, with only vague coarse punctures; hind margin raised above the level of the middle and extending backwards further than the apices of the hind lobes; ♀ brownish yellow with at least apical 1/3rd of hind tibia and most of tarsi, and sometimes a stripe behind each eye and a vitta on the mesonotal lobes black; ♂ has upper parts of head, mesonotum band on mesoepisternum and mesosternum black, but dorsum of abdomen steel blue; hind basitarsus longer than next two tarsal segments together. [Antenna black.] New South Wales, Victoria and South Australia, ♂ and ♀. *belinda* W. F. Kirby (1882) (= *nemoralis* Wilson, 1932, and ? *corrugata* . . . . . Forsius, 1935).
6. Antenna mostly black; mesopleura with few scattered punctures and shining areas between the punctures; upper part of head with a few shining interspaces among the punctures. [According to Wilson (1932, p. 46) this species is common in East Victoria and is frequently seen guarding its eggs and young, while the following species is rare. Saw (fig. 41 and Morice, plate xiv., fig. 15).] Queensland to South Australia, ♂ and ♀. . . *guerinii* (Westwood, 1880) (= *smithii* Westwood, 1880).
- Antenna always pale; mesopleurae at least in the middle densely regularly punctured; upper part of head without any shining interspaces among the punctures. ♂ and ♀. Queensland to South Australia. [The larva of this species feeds on *Eucalyptus corymbosa* and was described

by Froggatt, 1890, p. 286. For accounts of the maternal instinct in this species, see Lewis (1836, 1865) and Blackburn (1930). Saw (Morice, plate xiv., fig. 13).] Queensland to South Australia, ♂ and ♀. . . . . *lewisii* Westwood (1836).

#### ACANTHOPERGA Shipp, 1894.

Redescription: ♀. Head and palps as in *Perga* but the eyes are much more rounded (fig. 25); the antenna (fig. 3) is longer than the breadth of the head, 6-segmented, with funicle more than  $1\frac{1}{2}$  times as long as broad, segments 3, 4 and 5 almost equally long and each more than 4 times longer than broad; POL much less than OOL; clypeus with a slightly inflexed and emarginate apex; postocellar area slightly raised and with subparallel vertical furrows.

Thorax: Scutellum (fig. 14) about as long as the breadth behind, almost flat with at most a slight medial groove; hind lobes well developed and reaching back further than does the middle of the hind margin of the scutellum.

Wings with a small stigma not much more than  $\frac{1}{2}$  the breadth or length of the radial cell in the forewing; 3rd cubital vein almost straight and directed to a point behind the apex of the stigma; 4th cubital cell only about 2/3rds as long as the rest of the cubital cells together.

Legs with the fore tibia bearing a few incrassate hairs on the inside towards the apex; hind basitarsus as long or longer than the 3 following tarsal segments together; hind tarsi together not greater than about 2/3rds the length of the hind tibia; 5th hind arsal segment about as great as 3 and 4.

Abdomen stout with the dorsum dull with dense transverse rugulous sculpture; saw as in Morice, plate xiv., fig. 18. Type, *Perga cameronii* Westwood.

#### Key to ACANTHOPERGA species.

1. Postocellar area longer than broad and very densely and finely punctured without shining interspaces; tips of forewings infusate; abdomen orange brown above. . . . . 2.
- Postocellar area broader than long and with shining interspaces between the punctures; forewings not tipped with fuscous; abdomen yellow above. [Antenna (fig. 3) with apical segment shorter than 4 and 5; pedicel about as long as broad and as long as the malar space; hind basitarsus equal in length to the 3 following segments; pubescence on head and mesonotum piceous.] N. Queensland, ♀. . . . . *leucomelas* Rohwer, 1910.
2. Pedicel of antenna about as long as broad and as long as the malar space; hind basitarsus nearly equal to rest of tarsal segments together (about 7/8ths as long); pubescence on head and mesonotum piceous. [Apical segment of antenna longer than 4 and 5.] New South Wales, ♀. . . . . *marlatti* sp. nov.
- Pedicel about twice as broad as long and about  $\frac{1}{2}$  as long as malar space; hind basitarsus only about 3/4rds as long as rest of tarsal segments together; pubescence on head and thorax brown. [Antenna not seen; saw Morice, plate xiv., fig. 18.] Queensland and New South Wales, ♀. . . . . *cameronii* Westwood, 1870.

*ACANTHOPERGA MARLATTI*, *sp. nov.*

♀. Colour: Brown is the upperside of the head, and mesonotum; orange brown the dorsum of abdomen; chocolate is a spot on the upper hind orbits, the antenna except the apical 2/3rds of the last segment, a band starting on the pronotum, crossing the upper ½ of the pleura, and continuing along the lateral upper edge of the terga and covering the whole of the upper side of the last 2 terga, also the outer side and apex of tibia and more or less the 2 basal tarsal segments of the front and middle legs, the whole of the tibia and basal 2/3rds of the basitarsus of the hind legs; yellowish-white is the lower part of the head and face, the apical 1/3rd of the last antennal segment, the underside of thorax including femora, base of tibia in fore and middle legs, the apical tarsal segments and the underside of the abdomen; pure white is a band crossing the pleura immediately below the chocolate colour and continuing along the downturned sides of the terga but merging below into the yellowish white.

Wings slightly yellowish-tinged, with the extreme apex of the forewing fuscous; this band extending over the apical ½ of the 4th cubital cell; stigma and venation brown.

Length: 13 mm.; forewing, 11 mm.; antenna, 5 mm.

Head densely and finely punctured above, without interspaces on the postocellar area; puncturation becoming finer laterally so that on the hind orbits and face are no punctures; pubescence very short and piceous; antenna with the apical segment as long as segments 5 and 4 and half of 3 pedicel (2nd segment) nearly twice as long as broad and equal in length to the malar space.

Thorax with mesonotum dull, densely and finely punctured with no shining interspaces; pronotum shining with transverse striae; pleura and sterna shining with scattered punctures on the front ½ of the mesepisternum; hind basitarsus about 7/8ths as long as the rest of the tarsal segments together.

Abdomen dull above with dense transverse regulous sculpture; shining and unpunctured below.

New South Wales: E. Dorrigo, Brooklands, 1 ♀, 1929, W. Heron (Australian Museum, Sydney).

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